DOI:10.24041/ejmr2018.96

RENAL CELL CARCINOMA WITH THREE TYPES OF MORPHOLOGIES- A RARE ENTITY

Fariya Ali Siddqui, Nidhi Gupta, Noorin Zaidi, Nirupma Lal
Department of Pathology
Era's Lucknow Medical College & Hospital, Sarfarazganj Lucknow, U.P., India-226003

Received on : 03-07-2018
Accepted on : 15-10-2018

ABSTRACT

Renal cell carcinomas(RCC) are the most common solid lesions of kidney with commonest subtype being clear cell type. Very few studies have reported synchronous presentation of three different morphological variants of RCC. We present a case of renal cell carcinoma in a 50 year old female presenting with renal mass. Microscopic examination showed presence of papillary, clear cell and collecting duct types of morphologies, which is a rare finding. Hence thorough sectioning and microscopic examination should be done to rule out possibility of simultaneous presence of different morphological varieties of RCC.

Address for correspondence
Dr. Fariya Ali Siddqui
Department of Pathology
Era's Lucknow Medical College & Hospital, Lucknow-226003
Email: yehme.fariya@gmail.com
Contact no: +91-9793111122

KEYWORDS: Renal cell carcinoma, Papillary type, Clear cell type, Collecting duct type.

INTRODUCTION

Renal cell carcinoma (RCC) is the most common solid lesion of the kidney and accounts for approximately 2-3% of all malignancies in adults. (1)

The commonest subtypes of renal cell carcinoma are clear cell, papillary, and chromophobe type RCC and account for approximately 80%, 10%, and 5%, respectively. Among the benign neoplasms, renal angiomyolipoma (AML), and renal adenomas, oncocytoma are common. There are a few of studies that define bilateral synchronous malignant renal tumors (2–4) or coexisting benign and malignant tumors arising within the same kidney (5). Collecting duct carcinoma (CDC), also known as Bellini duct carcinoma is thought to arise from the collecting ducts of renal medulla, however it is a rare tumour and comprises less than 1% of renal epithelial neoplasms. (6-7)

To the best of our knowledge, Collecting duct RCC, clear cell RCC and papillary RCC arising within the same kidney are very rare in the literature.

Herein, we describe a case of a 50-year-old Female who had 3 different subtypes of renal cell carcinoma in the same kidney who underwent radical nephrectomy (RN).

CASE REPORT

A 50-year-old Female was admitted to another medical center with right flank pain lasting for more than one month. An ultrasound scan revealed a mass in the right kidney

Thorough history taking and examination was performed along with relevant investigations, and surgical resection was planned.

The tumor was clinically diagnosed as a right renal tumor and classified as cT1bN0M0, according to tumor- node-metastasis system. Patient underwent right RN and adrenalectomy. The specimen was sent for histopathological examination.

On macroscopic examination the kidney was distorted with attached ureter altogether measuring 14.10.8 cm. Cut surface showed a mass at one pole measuring 6.5X7 .5cm. which was well circumscribed with grey white to grey brown areas of necrosis. It appeared to push the other half of the kidney and pelvis which were compressed. Outer fatty tissue was grossly free from tumour invasion. Multiple sections were taken.

Sections from the tumor showed atypical cuboidal cells arranged in the form of papillae. These atypical cells had increased nucleocytoplsmic ratio, nuclear pleomorphism, clumped chromatin and scant cytoplasm, nuclear morphology was consistent with Fuhrman grade 2. The intervening stroma showed fibrocollagenous core which was infiltrated by lymphocytes and macrophages.

Focal area showed large clear cells which had shortly outlined boundaries interspersed by prominent network of delicate blood vessels and had Fuhrman grade 2 morphology with finely granular chromatin but small nucleoli that were not discernible at 10x magnification. Also seen were atypical cells in the form of branching tubules. Large areas of necrosis were also seen. Section from Perinephric fat showed infiltration by similar

atypical cells. The tumor invaded the renal capsule and extended into the perirenal fat.

Sections from pelvis, renal artery and vein were free from tumour.

DISCUSSION

RCC comprises 2-3% of all cancers (1). The incidence of RCC has also risen over the past several decades due to incidental detection (8). The best known etiological factors for all types of RCC are smoking, obesity, and hypertension (9). Among the documented etiologic causes that were described above, no known etiologic factor was present in our case.

RCC comprises several subtypes with specific histopathology and genetic characteristics, the most commonly diagnosed including clear cell, papillary, and chromophobe, collecting duct . Clear cell RCC has clear cytoplasm with solid, tubular, or cystic growth pattern. Two different papillary tumor subtypes have been defined. Both clear cell and papillary types of RCC originate from proximal tubules. Collecting duct RCC shows tubulopapillary architecture, atypical hyperplastic changes, clear cytoplasm, evident stromal reaction with fiber hyperplasia and detached single cells with a hobnail surface (10).

CDC is a rare pathologic type of RCC, with a tendency towards early dissemination and high mortality rates (11-12) The majority of CDC tumors have been found to demonstrate focal cortical extension, while perirenal invasion was also common in large tumors (13). This was a case of papillary and collecting duct and clear cell RCC in the same kidney and in a single tumor mass which also involved the perinephric fat.

AML and RCC have been defined many times in the literature in tuberous sclerosis (TSC) and non-TSC patients.

Billings et al. defined an 86-year-old woman without TSC with a coexisting 7 cm clear cell RCC and 9.5 cm AML in the same kidney that were treated with right RN successfully (5).

Khallouk et al. defined a case report of a 35-year-old male with TSC and bilateral massive AML. They performed right radical nephrectomy successfully and pathology revealed AML and clear cell RCC in the same kidney (14).

In addition to coexisting benign and malignant tumors in the same kidney, there have been described some reports that define the coexisting 2 different types of RCC.

Simhan et al. reported the data of 97 patients who had multifocal renal tumors. They reported 8 patients who had mixed (papillary and clear cell) RCC, all of which were treated by partial nephrectomy (15).

In the case reported by Kawano *et al*. the most predominant histological component was the chromophobe renal cell carcinoma(CRCC). The chromophobe cells also showed dedifferentiation. Besides this component, the CDC component was also noted, and the CRCC and CDC elements showed obvious transition to each other (16).

Roehrl *et al*. reported another case of RCC that exhibited the features of both chromophobe and papillary carcinoma within the same tumor (17).

Capaccio et al.found 7 patients who had unilateral synchronous tumors with different subtypes . One of them had oncocytoma and one had clear cell RCC with synchronous AML.

Remaining 5 patients had different histological subtypes of RCC, 3 of which had synchronous papillary and clear cell type RCC. The other 2 patients had chromophobe subtype RCC with unilateral synchronous papillary type in 1 patient and clear cell type RCC in 1 patient (18)

In fact, there is not sufficient data to compare the different types of RCC in the same kidney .

Patel et al (19) found that malignant concordance was 89% among the patients who had bilateral synchronous renal tumors. On the other hand, there is no such data for unilateral synchronous different type of RCC.

Fig 1: Gross Appearance Of The Renal Mass Showing Complete Loss Of Normal Renal Contour

Fig 2: Gross Appearance Of Cut Surface Of The Renal Mass Showing Loss Of Cortico-medullary Differentiation And A Yellowish Mass Occupying Almost Whole Of Kidney.

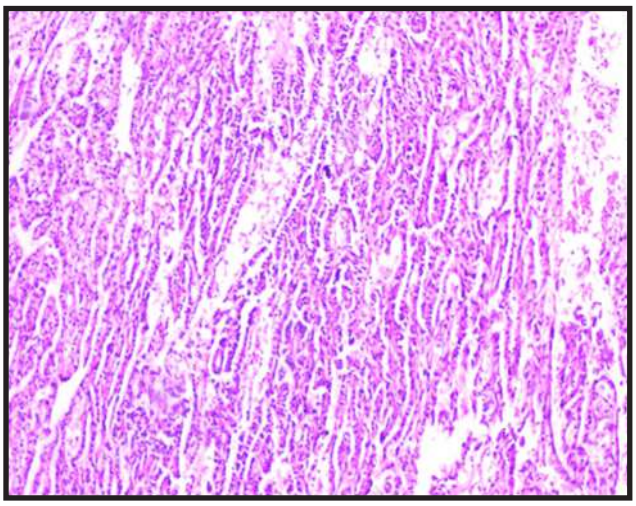

Fig 3: Photomicrograph Showing Collecting Duct Type Of Morphology (H&E X100)

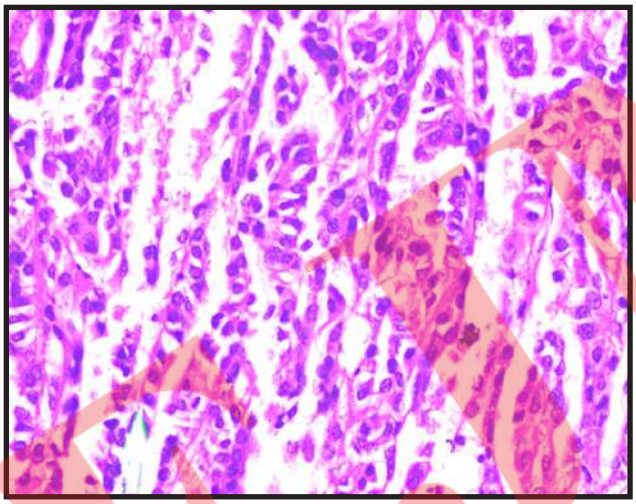

Fig 4 : Photomicrograph Showing Collecting Duct Type Of Morphology (H&E X400)

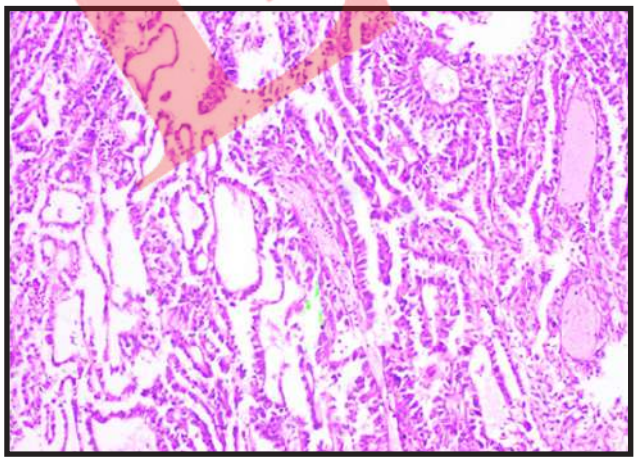

Fig 5: Photomicrograph Showing Presence Of Papillae Lined By 2 Cell Thick Layer And A Core Of Macrophages (H&E X100)

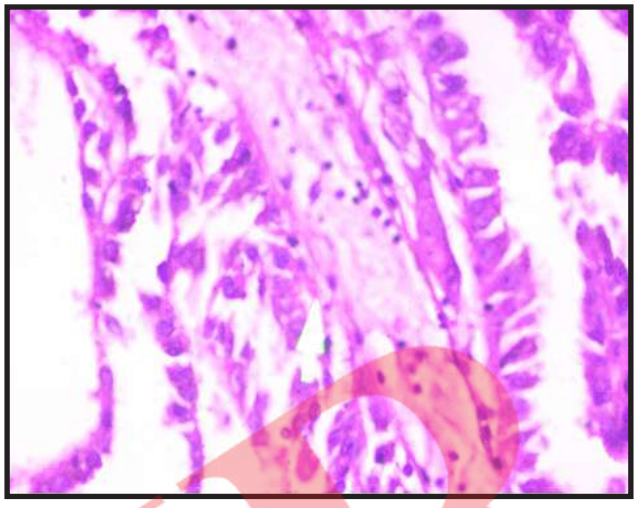

Fig 6: Photomicrograph Showing Papillae In High Power View With Core Of Acrophages(H&E X400)

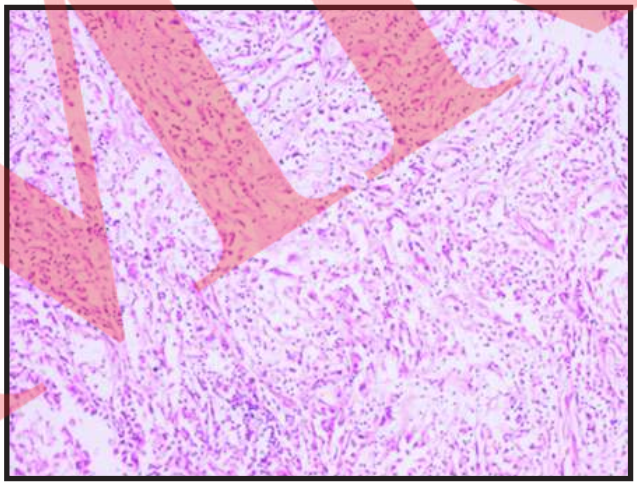

Fig 7: Photomicrograph Showing Nests Of Clear Cells With Clear Cytoplasm And Central Nuclei (H&E X100)

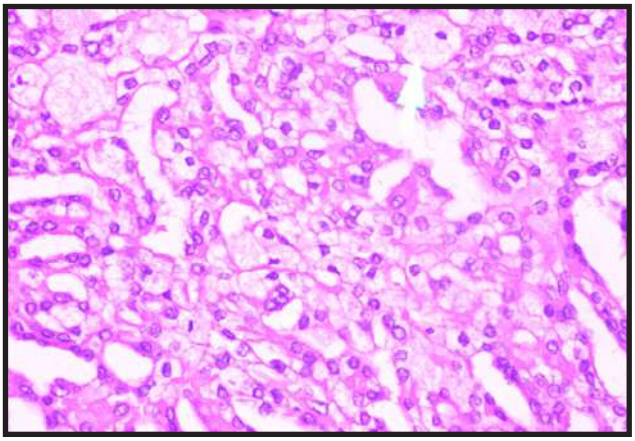

Fig 8: Photomicrograph Showing Nest Of Clear Cells In High Power (H&E X400)

CONCLUSION

Since three different subtypes of RCC have seldom been reported, our case presents a rare finding. So proper and thorough grossing should be done in cases of suspected RCC. However large number of studies are needed to make a comparison and comment on course of disease because this is a case without any controls or comparisons, so clinical implication is limited. However, synchronous 3 different types of RCC in same kidney should not change the management approach.

REFERENCES

1. Vera-Badillo FE, Conde E, Duran I. Chromophobe renal cell carcinoma: a review of an uncommon entity.International Journal of Urology. 2012;19(10):894–900.
2. Rothman J, Crispen PL, Wong Y, Al-Saleem T, Fox E, Uzzo RG. Pathologic concordance of sporadic synchronous bilateral renal masses. Urology. 2008;72(1):138–142.
3. Patel MI, Simmons R, Kattan MW, Motzer RJ, Reuter VE, Russo P. Long-term follow-up of bilateral sporadic renal tumors. Urology. 2003;61(5):921–925.
4. Klatte T, Wunderlich H, Patard JJ, et al. Clinicopathological features and prognosis of synchronous bilateral renal cell carcinoma: an international multicentre experience. BJU International. 2007;100(1):21–25.
5. Billings B, Hamrick LC, Bueschen AJ, Kenney PJ. Coexisting angiomyolipoma and renal cell carcinoma in a kidney of an elderly woman: case report and review of the literature. The Scientific World Journal.2004;4(supplement 1):27–30.
6. Srigley JR, Delahunt B. Uncommon and recently described renal carcinomas. Mod Pathol. 2009;22:2–23.
7. Tokuda N, Naito S, Matsuzaki O, Nagashima Y, Ozono S, Igarashi T. Japanese Society of Renal Cancer. Collecting duct (Bellini duct) renal cell carcinoma: a nationwide survey in Japan. J Urol. 2006;176:40–3.
8. Alasker A, Williams SK, Ghavamian R. Small renal mass: to treat or not to treat. Current Urology Reports. 2013;14(1):13–18.
9. Lipworth L, Tarone RE, McLaughlin JK. The epidemiology of renal cell carcinoma. The Journal of Urology. 2006;176(6, part 1):2353–2358.
10. Kennedy SM, Merino MJ, Linehan WM, Roberts JR, Robertson CN, Neumann RD. Collecting duct carcinoma of the kidney. Hum Pathol. 1990;21:449–456.
11. Sironi M, Delpiano C, Claren R, Spinelli M. New cytological findings on fine-needle aspiration of renal collecting duct carcinoma. Diagn Cytopathol. 2003;29:239–240.
12. Husillos A, Herranz-Amo F, Subirá D, Lledó E, Molina-Escudero R, Hernández-Fernández C. Collecting duct renal cell carcinoma. [(In Spanish). Actas Urol Esp. 2011;35:368–371. .
13. Pickhardt PJ. Collecting duct carcinoma arising in a solitary kidney: imaging findings. Clin Imaging. 1999;23:115–118.
14. Khallouk A, Ahallal Y, Doublali M, et al. Concurrent bilateral renal angiomyolipoma and renal cell carcinoma in a patient with tuberous sclerosis complex. Reviews in Urology. 2009;11(4):216–218.
15. Simhan J, Canter DJ, Sterious SN, et al. Pathological concordance and surgical outcomes of sporadic synchronous unilateral multifocal renal masses treated with partial nephrectomy. Journal of Urology. 2013;189(1):43–47.
16. Kawano N, Inayama Y, Nakaigawa N, et al. Composite distal nephron-derived renal cell carcinoma with chromophobe and collecting duct carcinomatous elements. Pathol Int. 2005;55:360–5.
17. Roehrl MH, Selig MK, Nielsen GP, Dal Cin P, Oliva E. A renal cell carcinoma with components of both chromophobe and papillary carcinoma. Virchows Arch. 2007;450:93–101.
18. Capaccio E, Varca V, Simonato A, Toncini C, Carmignani G, Derchi LE. Synchronous parenchymal renal tumors of different histology in the same kidney. Acta Radiologica. 2009;50(10):1187–1192.
19. Patel AR, Lee BH, Campbell SC, Zhou M, Fergany AF. Bilateral synchronous sporadic renal tumors: sspathologic concordance and clinical implications. Urology. 2011;78(5):1095–1099.

How to cite this article : Siddiqui F. A., Gupta N., Zaidi N., Lal N., Renal Cell Carcinoma With Three Types Of Morphologies- A Rare Entity. EJMR2018;5(2):197-200.